

UNITED STATES DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE

ECOLOGICAL SITE DESCRIPTION

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R036XB129NM

Site Name: Limy

Precipitation or Climate Zone: 10-16"

Phase: \_\_\_\_\_

## PHYSIOGRAPHIC FEATURES

### Narrative:

This site occurs on level to undulation piedmont slopes and plains and on the tops of mesas. Slopes average five percent or less although they may range to 10 percent. Elevations range from 5,500 to 7,300 feet. Aspect varies but is not significant.

### Land Form:

1. Fan piedmont
2. plains
3. piedmont slopes

### Aspect:

1. not significant

	Minimum	Maximum
Elevation (feet)	5500	7300
Slope (percent)	0	10
Water Table Depth (inches)	--	--
Flooding:	Minimum	Maximum
Frequency	--	--
Duration	--	--
Ponding:	Minimum	Maximum
Depth (inches)	--	--
Frequency	--	--
Duration	--	--

### Runoff Class:

Medium Hydrologic group B-C

## CLIMATIC FEATURES

### Narrative:

Average annual precipitation varies from about 10 inches to just over 16 inches. Fluctuations ranging from about 5 inches to 25 inches are not uncommon. The overall climate is characterized by cold dry winters in which winter moisture is less than summer. As much as half or more of the annual precipitation can be expected to come during the period of July through September. Thus, fall conditions are often more favorable for good growth of cool-season perennial grasses, shrubs, and forbs than are those of spring.

The average frost-free season is about 120 days and extends from approximately mid-May to early or mid-September. Average annual air temperatures are 50 degrees F or lower, and summer maximums rarely exceed 100 degrees F. Winter minimums typically approach or go below zero. Monthly mean temperatures exceed 70 degrees F for the period of July and August.

Rainfall patterns generally favor warm-season perennial vegetation, while the temperature regime tends to favor cool-season vegetation. This creates a somewhat complex community of plants on a given range site, which is quite susceptible to disturbance and is at or near its productive potential only when both the natural warm-and cool-season dominants are present.

	Minimum	Maximum
Frost-free period (days):	51	171
Freeze-free period (days):	130	252
Mean annual precipitation (inches):	10	16

### Monthly moisture (inches) and temperature (<sup>0</sup>F) distribution:

	Precip. Min.	Precip. Max.	Temp. Min.	Temp. Max.
January	.40	.91	12.9	47.0
February	.43	.65	16.6	51.2
March	.47	1.10	20.9	57.1
April	.30	.49	26.1	65.3
May	.46	.98	33.4	74.2
June	.51	.57	41.4	84.2
July	2.15	3.45	50.4	85.1
August	2.28	3.03	48.7	82.4
September	1.29	1.68	41.4	77.9
October	.81	1.12	29.4	69.2
November	.38	.71	19.1	57.3
December	.53	.95	13.1	48.9

Climate Stations:					
Station ID	290640	Location	Augustine 2E	From:	Period 05/01/26 To 07/31/00
Station ID	296812	Location	Pietown 19NE	From:	Period 09/01/88 To 07/31/00
Station ID	297180	Location	Quemado	From:	Period 08/01/15 To 07/31/00

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### INFLUENCING WATER FEATURES

Narrative:

This site is not influenced by water from a wetland or stream.

Wetland description:

System	Subsystem	Class
N/A		

If Riverine Wetland System enter Rosgen Stream Type:

N/A

## REPRESENTATIVE SOIL FEATURES

### Narrative:

The soils of this site are well drained and moderately deep to deep. The surface textures range from loams to clay loams. Water-holding capacity is moderate to high and permeability is moderate. These soils are typically slightly effervescent on the surface with effervescence increasing with depth. There is a calcareous horizon within 20 inches of the surface that may be weakly cemented. This may affect the rooting depth of the vegetation. These soils are highly susceptible to wind and water erosion.

Characteristic taxonomic units are: Harvey loam, Flaco cobbly loam, loam

Parent Material Kind: Eolian and alluvial

Parent Material Origin: basalt

### Surface Texture:

1.	Clay loam
2.	Sandy clay loam, Sandy loam
3.	Very fine sandy loam

### Surface Texture Modifier:

1.	--
2.	--
3.	--

Subsurface Texture Group: Clay loam

Surface Fragments  $\leq 3''$  (% Volume): --

Surface Fragments  $> 3''$  (% Volume): --

Subsurface Fragments  $\leq 3''$  (% Volume): 5-19

Subsurface Fragments  $\geq 3''$  (% Volume): 1-3

	Minimum	Maximum
Drainage Class:	<u>well</u>	<u>well</u>
Permeability Class:	<u>slow</u>	<u>Moderately rapid</u>
Depth (inches):	<u>20</u>	<u>&gt;72</u>
Electrical Conductivity (mmhos/cm):	<u>0.00</u>	<u>4.00</u>
Sodium Absorption Ratio:	<u>0.00</u>	<u>5.00</u>
Soil Reaction (1:1 Water):	<u>7.4</u>	<u>8.4</u>
Soil Reaction (0.1M CaCl <sub>2</sub> ):	<u>--</u>	<u>--</u>
Available Water Capacity (inches):	<u>2</u>	<u>5</u>
Calcium Carbonate Equivalent (percent):	<u>--</u>	<u>--</u>

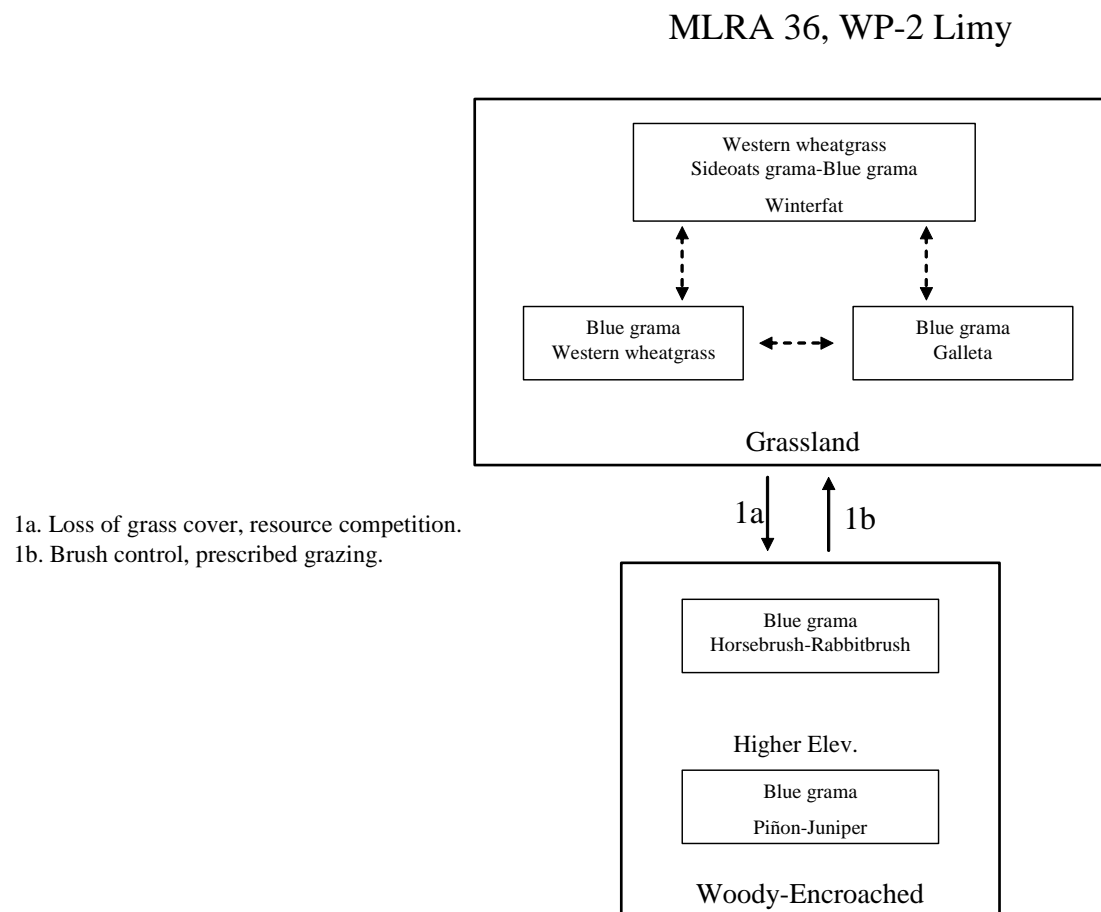
## PLANT COMMUNITIES

### Ecological Dynamics of the Site:

#### Overview

This site occurs on piedmont slopes, plains, and mesa tops. The soils are moderately deep to deep with a horizon high in calcium carbonate within twenty inches of the surface. This site is often associated with Loamy and Malpais sites. Loamy sites often occur adjacent to, or as inclusions interspersed within Limy sites. On basalt-capped mesas, Malpais sites are occasionally associated with Limy sites. The historic plant community of the Limy site is a grassland characterized by a mixture of cool-and warm-season grasses with occasional shrubs and forbs. Western wheatgrass is the dominant grass, and winterfat is the key shrub species. Overgrazing can reduce grass cover and effect a change in grass species dominance. The loss of grass cover can reduce the competitive influence of grasses and may facilitate the transition to the Woody-Encroached state.

Plant Communities and Transitional Pathways (diagram)



Plant Community Name: Historic Climax Plant Community

Plant Community Sequence Number: 1 Narrative Label: HCPC

Plant Community Narrative:

**State Containing Historic Plant Community**

**Grassland:** Western wheatgrass is the dominant grass of the historic plant community. Other important grasses that occur in significant amounts include sideoats grama, New Mexico feathergrass, needle and thread, blue grama, galleta, and black grama. At higher elevations (usually greater than 6,800 feet), black grama is typically only a minor component while western wheatgrass and blue grama may increase in percent composition. Winterfat is the key woody species for this site. Other species include fourwing saltbush, Bigelow sagebrush, rabbitbrush, spineless horsebrush, cholla and yucca. Piñon and juniper are typically minor components on this site, but may be found at greater densities at higher elevation within the Land Resource Unit. Overgrazing can cause a decrease in western wheatgrass and other cool-season grasses, sideoats grama, winterfat, and fourwing saltbush. Communities dominated by blue grama with western wheatgrass or galleta as the sub-dominant may result.

**Diagnosis:** Grass and litter cover are uniform with few large bare areas present. Evidence of erosion such as pedestalling of plants, rills, and gullies are infrequent.

**Ground Cover (Average Percent of Surface Area).**

Grasses & Forbs	15-20
Bare ground	45-55
Surface gravel	
Surface cobble and stone	5-20
Litter (percent)	10-15
Litter (average depth in cm.)	2
Surface Gravel (% cover)	

**Plant Community Annual Production (by plant type):**

Plant Type	Annual Production (lbs/ac)		
	Low	RV	High
Grass/Grasslike	300	530	760
Forb	28	50	71
Tree/Shrub/Vine	47	83	119
Lichen	--	--	--
Moss	--	--	--
Microbiotic Crusts	--	--	--
Totals	375	662.5	950

Plant Community Composition and Group Annual Production:

Plant Type - Grass/Grasslike

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
1	ELLAL PASM	Thickspike wheatgrass Western wheatgrass	66-133	66-133
2	BOGR2 BOHI2	Blue grama Hairy grama	66-99	66-99
3	HENE5 HECO26	NM Feathergrass Needle-and-Thread	66-133	66-133
4	PLJA	Galleta	33-66	33-66
5	SPAI	Alkali sacaton	20-33	20-33
6	ACHY	Indian ricegrass	20-33	20-33
7	ELEL5	Bottlebrush squirreltail	20-33	20-33
8	SPCR SPCO4 LYPH	Sand dropseed Spike dropseed Wolftail	20-33	20-33
9	BOCU	Sideoats grama	66-99	66-99
10	BOER4	Black grama	33-66	33-66

Plant Type - Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
11	KRLA2	Winterfat	33-66	33-66
12	ATCA2	Fourwing saltbush	7-33	7-33
13	EPHED	Ephedra spp.	7-20	7-20
14	ARBI	Bigelow sagebrush	7-33	7-33
15	ERNAN5 TECA2 GUSA2	Rabbitbrush Spineless horsebrush Broom snakeweed	7-20	7-20
16	PIED JUNIP	Pinyon Juniper	7-20	7-20
17	Various	Other shrubs	20-33	20-33

Plant Type – Forb



18	2PF	Perennial forbs	7-53	7-53
19	2AF	Annual forbs	7-33	7-33

Plant Type - Lichen

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Moss

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Microbiotic Crusts

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Growth Curves

Growth Curve ID NM 0319

Growth Curve Name: HCPC

Growth Curve Description: WP-2 Limy HCPC

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	5	10	10	10	20	25	15	5	0	0

**Additional States:**

**Woody-Encroached:** This state is characterized by an increase in woody species, typically spineless horsebrush and or rabbitbrush, and in some instances at higher elevations, piñon and juniper. Blue grama is the dominant grass and galleta and threeawns are sub-dominants. Grass cover decreases as shrub/tree canopy increases.

**Diagnosis:** Grass production and species composition have decreased relative to the Grassland State. Grass and litter cover range from fairly uniform, to patchy with large bare areas present. Evidence of erosion including pedestalling of grasses, elongated water flow patterns, and rills may be common.

**Transition to Woody-Encroached (1a)** Loss of grass cover due to overgrazing and the associated reduced competition by grasses may facilitate woody encroachment.<sup>3</sup>

Key indicators of approach to transition:

- Decrease or change in composition or distribution of grass cover, such as dominance by blue grama.
- Increase in size and frequency of bare patches.
- Increase in amount of rabbitbrush, horsebrush, or juniper/piñon seedlings.

**Transition back to Grassland (2b)** Brush control is necessary to reduce the competitive influence of shrubs. Some positive results have been reported in controlling rabbitbrush with herbicides.<sup>2, 4</sup> Root plowing and other mechanical control methods that sever the plant below the sprouting zone may reduce horsebrush and rabbitbrush densities. Horsebrush and rabbitbrush are fire-adapted species and can quickly increase or occupy a site following fire. Mechanical<sup>1</sup>, chemical, or a combination can be effective in reducing piñon/juniper densities. Prescribed grazing will help ensure adequate rest following brush control and will assist in the establishment and maintenance of grass cover.

## ECOLOGICAL SITE INTERPRETATIONS

### Animal Community:

This range site provides a habitat, which supports a resident animal community characterized by pronghorn antelope, blacktailed jackrabbit, badger, Gunnison's prairie dog, mourning dove, prairie rattlesnake, and American bison. The common raven, prairie falcon, and Mexican eagle hunt over this site. Mule deer feed on the site.

### Hydrology Functions:

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

Hydrologic Interpretations	
Soil Series	Hydrologic Group
Harvey	B
Falco	C

#### Recreational Uses:

This site offers fair to good potential for hiking, horseback riding, nature observation, and photography. Camping is limited due to the lack of water and shade. Hunting for antelope and small game is good. During years of abundant rainfall, the natural beauty is enhanced by an array of colorful wildflowers.

#### Wood Products:

Under the potential vegetative community, this site has little potential for wood products. However, in areas where pinyon and juniper have increased there is a limited potential for fencing material and fuelwood.

#### Other Products:

This site is suitable for grazing by all kinds and classes of livestock during all seasons of the year but is poorly suited to continuous yearlong use. Species such as Western wheatgrass, New Mexico feathergrass, Sideoats grama, Winterfat, and Fourwing saltbush will decrease. They will be replaced by blue grama, broom snakeweed, yucca, and cholla. Continued deterioration of the site can cause severe erosion. This site responds best to a system of grazing that rotates the season of use. In some areas, pinyon and juniper have increased on this site and may appear as even-aged, long-lived stands.

Other Information:	
Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month	
Similarity Index	Ac/AUM
100 - 76	3.3-4.6
75 – 51	4.4-6.8
50 – 26	6.5-11.0
25 – 0	11.0+

Plant Preference by Animal Kind:

	Code	Species Preference	Code
Stems	S	None Selected	N/S
Leaves	L	Preferred	P
Flowers	F	Desirable	D
Fruit/Seeds	F/S	Undesirable	U
Entire Plant	EP	Not Consumed	NC
Underground Parts	UP	Emergency	E
		Toxic	T

Animal Kind: Livestock

Animal Type: Cattle

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Western wheatgrass	<i>Pascopyrum smithii</i>	EP	D	D	P	P	P	D	D	D	D	D	D	D
Needle and Thread	<i>Hesperostipa comata</i>	EP	D	D	P	P	P	D	D	D	D	D	D	D
NM Feathergrass	<i>Hesperostipa neomexicana</i>	Ep	D	D	P	P	P	D	D	D	D	D	D	D
Indian ricegrass	<i>Achnatherum hymenoides</i>	Ep	P	P	P	P	P	P	P	P	P	P	P	P
Bottlebrush squirreltail	<i>Elymus elymoides</i>	Ep	U	U	D	D	D	U	U	U	D	D	D	U
Bigelow sagebrush	<i>Artemisia bigelovii</i>	Ep	D	D	D	D	D	D	D	D	D	D	D	D
Fourwing saltbush	<i>Atriplex canescens</i>	EP	P	P	P	P	P	D	D	D	D	D	D	P
Winterfat	<i>Krascheninnikovia lanata</i>	Ep	D	D	P	P	P	P	P	P	D	D	D	D
Black grama	<i>Bouteloua eriopoda</i>	Ep	P	P	P	D	D	D	D	D	D	D	P	P
Sideoats grama	<i>Bouteloua curtipendula</i>	Ep	D	D	D	D	D	D	D	D	D	D	D	D

## **Supporting Information**

### Associated Sites:

<u>Site Name</u>	<u>Site ID</u>	<u>Site Narrative</u>
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### Similar Sites:

<u>Site Name</u>	<u>Site ID</u>	<u>Site Narrative</u>
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### State Correlation:

This site has been correlated with the following states:

### Inventory Data References:

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
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### Type Locality:

### Relationship to Other Established Classifications:

### Other References:

1. Brockway, D.G., R.G. Gatewood, and R.B. Paris. 2002. Restoring grassland savannas from degraded pinyon-juniper woodlands: effects of mechanical overstory reduction and slash treatment alternatives. *Journal of Environmental Management*. 64: 179-197.
2. Cluff, G.J., B.A. Roundy, R.A. Evans, and J.A. Young. 1983. Herbicidal control of greasewood (*Sarcobatus vermiculatus*) and salt rabbitbrush (*Chrysothamnus nauseosus* ssp. *consimilis*). *Weed Science*. 31: 275-279.
3. Johnsen, T.N., Jr. 1962. One-seeded juniper invasion of northern Arizona grasslands. *Ecological Monographs*. 32:187-207.
4. Whisenant, S.G. 1988. Control of threadleaf rubber rabbitbrush with herbicides. *Journal of Range Management*. 41: 470-472

Data collection for this site was done in conjunction with the progressive soil surveys within the New Mexico and Arizona Plateaus & Mesas Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: McKinley, Catron, Cibola, Socorro and Sandoval.

Characteristic Soils Are:

Other Soils included are:	

Site Description Approval:

<u>Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
Don Sylvester	05/15/84	Don Sylvester	05/15/84

Site Description Revision:

<u>Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
Brenda Simpson	07/23/02	George Chavez	06/10/05
David Trujillo	06/10/05		